

Test/Service Programs
Ericsson Mobile Phone EF738

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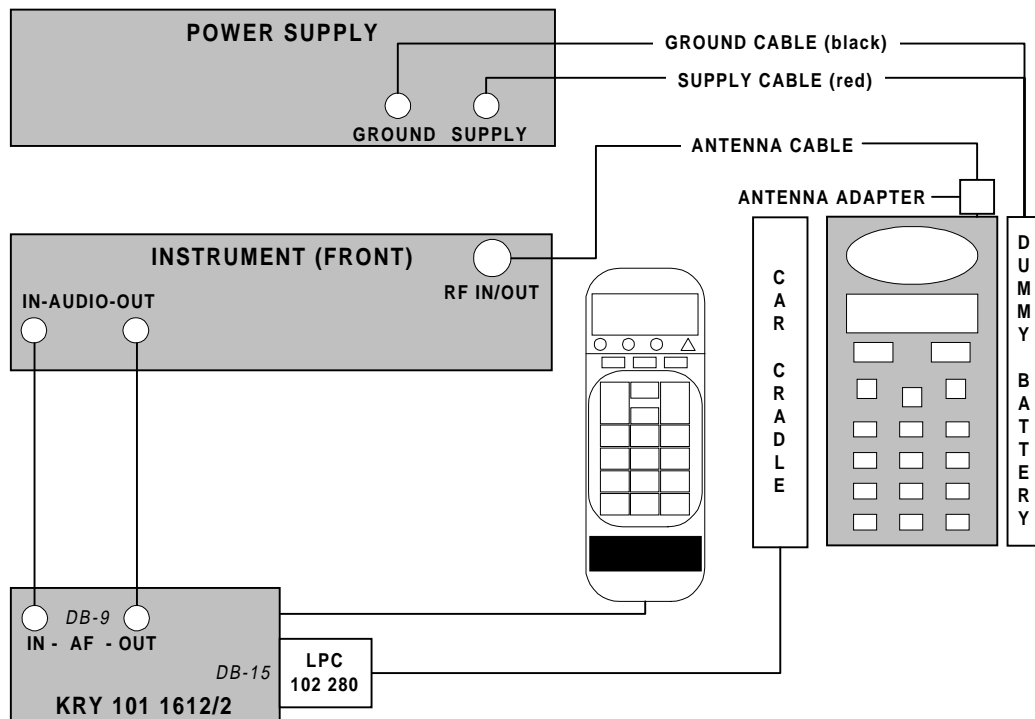
Test Equipment

The type of equipment required for service on the *Ericsson Mobile Phone EF738* is listed below and includes instruments, tools, and other hardware.

Descriptions of the programs for test, service, NAM programming, ESN transfer, and software upgrading are also included in the following subsections.

Recommended Instruments

| <i>Instrument</i> | <i>Recommended Unit</i> |
|--------------------------------|-------------------------|
| <i>Alternative 1:</i> | |
| Radio Test System | Marconi 2960 |
| <i>Alternative 2:</i> | |
| Communication Test Set | Schlumberger 4031 |
| <i>Alternative 3:</i> | |
| Communications Test Set | Schlumberger 4015 |
| <i>Alternative 4:</i> | |
| Radio Test Set | Rohde & Schwarz CMS 52 |
| Signalling Unit | Rohde & Schwarz CMS-B13 |
| <i>Other alternatives:</i> | |
| Oscilloscope | Tektronix 2235 |
| Multimeter | Hewlett-Packard 3468A |
| Digital Voltmeter | Fluke 8060A |
| Power Supply Unit | Power Box EK030-10 |



Other Equipment

| Equipment | Ordering Number |
|-----------------------|-----------------|
| ETACS Service Program | |
| Programming Interface | NTZ 112 311 |
| Connection Cable | KRY 101 1135/10 |
| Adapter | LPC 102 280 |
| Car Cradle | KRY 109 1001/72 |
| Test Handset | NTZ 112 210 |
| Antenna Cable | NTZ 112 294 |
| Antenna Cable Adapter | RNT 403 012/003 |
| Dummy Battery | NTZ 112 310 |
| Service Adapter Kit | |
| - Test Interface Box | LPC 102 280 |
| - Audio Box | KRY 101 1612/51 |
| - Power Supply 110V | KRY 101 1612/54 |
| - Power Supply 220V | KRY 101 1612/55 |

Standard tools and soldering equipment must also available

Note: *When servicing mobile telephones, it is most important that a bench earthing network is used to protect sensitive components against electrostatic discharge (ESD).*

Test Program

How to Use

This document will describe the use of the built-in test program for the *EF738*. After the more extensive descriptions found in *Individual Test Options*, an overview follows in the form of a table with data referring to the different options. This table will become a handy alternative after having some experience of the test program.

Initiating the Test Program

The test program is initiated from the special test handset;
by holding down the **M** button and pressing **90 40 59** or
by pressing **90 40 59** followed by **M M**

However, if the *Test Program Enter* function is enabled in the telephone, the program can be initiated and run directly from the keypad by pressing the same sequence (**M** = **MENU**).

When the phone enters the test mode, the hardware becomes initialized and the text *TEST INPUT* appears in the display.

To step forward and backwards in the test program; press **SEND** and **RCL**.
To choose a specific test; press its number followed by the **#** button.

Return to TEST INPUT

Press the **C** or **M** button to return to the input mode where the *TEST INPUT* prompt is displayed.

Exit

To exit from the test program; select **test option 99** and press the **#** button.

Individual Test Options

A list describing the use of the test program options follows below.

A summary of the test options and possible parameter values is given as well.

- 1 CH NUMBER** Setting of channel number
Choose any channel in the ETACS system (0-600, 1329-2047).
Default setting is channel 1.
To change channel number; enter a 4-digit decimal number followed by #.
Use * and # to step backwards/forwards.
Channel number and signal strength are displayed.
- 2 TX POWER** Sets the transmitter on and off and determines the output power level.
8 off
7 power level 7; minimum output power
6 power level 6
5 power level 5
4 power level 4
3 power level 3
2 power level 2; maximum output power
When the power reduction function is activated in menu 76, power level 2 will be displayed as 'S'.
When the extra power option in menu 76 is activated, power level 2 will be displayed as 'X'.
- 4 FLASHER** Used only when loading the program into a terminal.
- 5 PWR CAL** Calibration of power levels.
Transmitter is turned on and tuned to the calibration channel.
Modify the power levels with the following keys:
/ * increases/decreases the power level
M+S stores the value and steps to next power level; transmitter is turned on
M+# starts calibration and displays power level; steps forward to next power level (2->3->...->7->2).
C turns off TX, restores channel no., returns to menu 0.
- 6 TX DETECT** Performs two simple transmitter tests: a general Go/NoGo transmitter test and a transmitter leakage test.
To start the test, press any key except C.
The result is displayed when the test is finished:
FF both tests passed
01 general transmitter test failed
02 leakage test failed
- 7 TX SENS** Factory and level 5 repair only

| | |
|---------------------|---|
| 9 RF CAL | <p>Calibrates the RSSI levels based on the level of the signal currently being received.</p> <p>The value determined for each level is the minimum strength signal for that level, averaged over 16 readings to provide a more reliable value.</p> <p>The value for level 0 is used to update the Receiver Carrier Detect (RXCD) such that signals below this level are ignored. This value (plus a fixed offset) also determines the minimum signal threshold for the AFC.</p> <p>When the received signal is below this threshold, the AFC provides TCXO compensation based on a default temperature compensation table.</p> <p>The values for level 1 and 5 are used to determine the RSSI graph to display.</p> <p>The values for level 2, 3 and 4 are interpolated from these two reference levels.</p> <p>M+# displays the next RSSI level number and its current value</p> <p>M+S reads an averaged RSSI value and stores it</p> |
| 10 RX SENS | <p>Adjustment of the receiver audio output</p> <p>M+# enables calibration and echoes the initial value</p> <p># / * increases/decreases the value by 1; new value is echoed</p> <p>M+S stores the current value</p> |
| 11 KEYPAD | Factory and level 5 repair only |
| 13 BANDGAP | Factory and level 5 repair only |
| 14 AUDIO DEV | <p>Adjustment of the audio deviation</p> <p>M+# enables calibration and echoes the initial value</p> <p># / * increases/decreases the value by 1; new value is echoed</p> <p>M+S stores the current value</p> |
| 15 AFC | <p>Sets the AFC operating mode and displays AFC information</p> <p>0 only temperatue compensation</p> <p>1 temp. + age compensation</p> <p>2 temp. + age + freq. compensation, smoothed (default)</p> <p>3 temp. + age + freq. compensation, no smooth</p> <p>4 no compensation</p> <p>Any other code entered in handset mode will display: ABCCDDEEFF where</p> <p>A = AFC operating mode</p> <p>0 only temperatue compensation</p> <p>1 temp. + age compensation</p> <p>2 temp. + age + freq. compensation, smoothed (default)</p> <p>3 temp. + age + freq. compensation, no smooth</p> <p>4 no compensation</p> |

B = AFC state

- 1** waiting for signal;
(no valid RSSI, compensate for temp. or temp. + age)
- 2** acquiring lock;
(RSSI good, use whole freq. error for 1.5 sec for fast lock)
- 3** locked (RSSI good, use smoothed freq. compensation)
- 4** freeze lock (RSSI temporarily lost, compensate for temp + age + (frozen) freq. error for up to 30 sec.)
- 5** locked using short count;
(RSSI good, use smoothed freq compensation);
only entered when current savings is active;
short freq. measurements is used to find freq. error compensation
- 6** entered when DRX has started;
compensate for temp. + age + (frozen) freq. error.

CC total compensation

DD temperature table component

EE age component

FF frequency error component

18 DAC2CAL

Calibration of the VCTCXO.

M+# enables calibration and echoes the initial value

/ * increases/decreases the value by 1; new value is echoed

M+S stores the current value

During the calibration the AFC is in 'Temperature only compensation mode' (Tp-15:0)

Upon exiting the calibration the AFC returns to its previously selected operating mode.

19 RX SAT

Factory and level 5 repair only

20 AUDIO

Sets the audio paths in the audio circuit

| Key | <i>TX-audio</i> | <i>RX-audio</i> |
|----------|-----------------|-----------------|
| 0 | muted | muted |
| 1 | unmuted | muted |
| 2 | muted | unmuted |
| 3 | unmuted | unmuted |

21 HANDSET

Sets the audio paths in the handset.

- 0** microphone off, earphone off, loudspeaker off (default)
- 1** microphone on, earphone on, loudspeaker off
- 2** microphone off, earphone off, loudspeaker on

22 TX SAT

Controls the SAT tone switch and TX SAT deviation.

- 0** generate 5970 Hz SAT
- 1** generate 6000 Hz SAT
- 2** generate 6030 Hz SAT
- 3** no SAT generated
- 4** SAT tone switch setting = ON
- 5** SAT tone switch setting = OFF

M+# enables calibration and echoes the initial value

/ * increases/decreases the value by 1; new value is echoed

M+S stores the value

- 23 MANCH OUT** Controls the wideband data and deviation
 To transmit these data the transmitter must be switched on.
0 off - no data output)
1 8kHz output; ones
2 8kHz output; zeros
3 hardcoded idle frame; 0101010101
M+# enables calibration and echoes the initial value
/ * increases/decreases the value by 1; new value is echoed
M+S stores the value
- 24 MANCH IN** Displays the latest received data from the base station.
 The value is displayed each time a key is pressed.
- 25 VOLUME** Sets the earpiece and loudspeaker volume.
 Possible values: 0 - 7 (default: 3)
- 26 DTMF** DTMF tones consist of a lower frequency in combination with a higher frequency.
 The test enables listening to either or both as follows:
0 low frequency
1 high frequency
2 both frequencies.
/ * scroll forwards/backwards to next/previous DTMF tone
M+# enables calibration and echoes the initial value
/ * increase/decrease the value by 1; new value is echoed
M+S stores the value
- 27 TX SOURCE** Sets the TX audio paths in the audio circuit.
 Also possible to adjust the levels of the different audio paths.
0 external line input, ATMS (default)
1 internal MIC
2 internal MIC with MicAmp gain
M+# enables calibration and echoes the initial value
/ * increases/decreases the value by 1; new value is echoed
M+S stores the value
- 28 EARPIECE** Sets the earpiece mute switch in the audio circuit to allow for adjustment of the earpiece sensitivity values.
0 internal earpiece disconnected
1 internal earpiece connected
2 audio sent out AFMS on system connector (default)
 internal earpiece and AFMS can both be adjusted
M+# enables calibration and echoes the initial value
/ * increases/decreases the value by 1; new value is echoed
M+S stores the value
- 29 COMP** Selects compander or linear mode
M+# displays the current compander settings
M+0 linear mode (default)
M+1 companding mode

| | |
|---------------------|---|
| 30 HF | Controls the handsfree attenuation level for RX and TX audio |
| M+0 | selects RX handsfree audio gain settings and echoes initial gain settings |
| M+1 | selects TX handsfree audio gain settings and echoes initial gain settings |
| 0-7 | sets the gain for the selected path: 0=0dB, 1=-7dB, 2= -14dB, ... 7=-49dB |
| 32 SOFTLIMIT | Sets the use of the softlimiter in the audio circuit. Changes made are temporary and will not update the EEPROM. |
| 35 COUNTRY | Factory and level 5 repair only |
| 36 BER | Factory and level 5 repair only |
| 37 OMC | Factory and level 5 repair only |
| 38 ADC | Displays the different hex values from the ADC |
| M+1 | RSSI |
| M+2 | battery voltage |
| M+3 | unused |
| M+4 | temperature sense |
| M+5 | bandgap reference |
| M+6 | current sense |
| M+7 | handsfree level |
| 39 DAC | Changes temporarily the output voltage from the DAC. |
| M+1 | normally controlled by AFC |
| M+2 | normally trimmed using 'MENU 18' |
| M+3 | power level |
| xxx M+# | decimal value followed by 'MENU + #' sent directly to the active DAC (valid values: 000 - 255) |
| # / * | increases/decreases value by 1; new value is echoed |
| 40 INPORT | Shows the status of the different inports (updated every second) |
| M+1 | external audio connection detected 0 = input high 1 = input low |
| M+2 | state of CPU port 2 |
| M+3 | flip status 0 = flip closed 1 = flip open |
| M+4 | transmitter status 0 = transmitter off 1 = transmitter on |
| M+6 | external handsfree detected 0 = input low 1 = input high |
| M+7 | receiver carrier detect 0 = RSSI < sensitivity limit 1 = RSSI > sensitivity limit |
| # | immediately reads the selected port |

- 41 OUTPORTS** Shows the status of the selected outport
First select a digital outport:
M+1+0 VRX
M+1+1 VTX, **Note!** VRX must be on!
M+1+2 power down VCO
M+1+3 unused
M+1+4 SWDC
M+1+5 MPD2
M+1+6 FMPD1
M+1+7 unused
M+1+8 temperature
M+2 ICTRL
M+3 MUTE
M+4 green LED
M+5 red LED
M+6 back light
Then select the state:
0 set output low
1 set output high
- 42 DSCR** Turns the discriminator and multiplier on and off
0 discriminator off
1 discriminator on (default)
- 43 BAR** Tests the different tones of the phone
0 continuous ringing signal at maximum volume
1 continuous alarm signal
2 click signal single pulse
3 error signal single pulse
4 continuous 3kHz ringing tone
- 45 LCD** Tests the different segment and icons of the display as five different patterns
M+digit (1-5) shows the selected pattern no. (1-5)
shows all patterns continuously starting with pattern no. 1
C or S terminates the test
- 46 PWR DOWN** Factory and level 5 repair only
- 47 SW REV** Displays the software, revision and ESN inside the terminal.
 Press any key to show software name and revision.
 Additional pressure of any key will show the ESN.
- 48 SYNTH** Factory and level 5 repair only
- 49 RX PWR MODE** Factory and level 5 repair only
- 50 GUARANTEE** Press any key to display year and month when warranty/guarantee was activated and the length (months) of the warranty period
- 53 SYNT I SET** Factory and level 5 repair only
- 54 EEPROM INIT** Factory and level 5 repair only

Test/Service Programs

| | |
|-----------------------------|---|
| 60 SYNTH | Factory and level 5 repair only |
| 61 AUDIO CIRCUIT | Factory and level 5 repair only |
| 62 RADIO CTRL | Factory and level 5 repair only |
| 74 TCA TEST | Checks the ETACS combining algorithm |
| 76 BATT SAVE | Controls the reduced and extra power functions 0 off 1 power reduction invoice channel (power level 2 only) 2 extra power (power level 2 only) |
| 77 EEDATA | Factory and level 5 repair only |
| 79 PIN | Factory and level 5 repair only |
| 91 EEPROM DUMP | Factory and level 5 repair only |
| 92 EEPROM LOAD | Factory and level 5 repair only |
| 96 COLD START | Clears the RAM, exits service & test mode, and powers up in 'terminal charge only mode' # exit service & test mode; power up in normal mode M+# exit service & test mode; power up in charge only mode |
| 97 FLASH CHSUM | Calculates the checksum of the flash memory # 2 bytes checksum will be displayed |
| 98 ERROR | Factory and level 5 repair only |
| 99 EXIT | Press # to exit the service program |

Overview of the Test Program

| <i>Menu</i> | <i>Possible Values</i> |
|---------------------|--|
| 1 CH NUMBER | 0-600, 1329-2047 |
| 2 TX POWER | 8 (off) - 2 (maximum power) |
| 4 FLASHER | only used when loading program into terminal |
| 5 PWR CAL | calibration of power levels |
| 6 TX DETECT | simple test of transmitter |
| 7 TX SENS | factory and level 5 repair only |
| 9 RF CAL | RSSI calibration |
| 10 RX SENSE | adjustment of receiver audio output |
| 11 KEYPAD | factory and level 5 repair only |
| 13 BANDGAP | factory and level 5 repair only |
| 14 AUDIO DEV | adjustment of maximum audio deviation |
| 15 AFC | sets AFC operating mode and displays AFC information |
| 18 DAC2CAL | calibration of VCTCXO |
| 19 RX SAT | factory and level 5 repair only |
| 20 AUDIO | sets audio paths in audio circuits |
| 21 HANDSET | sets audio paths in handset |
| 22 TX SAT | controls SAT tone switch and TX SAT deviation |
| 23 MANCH OUT | controls wideband data and deviation |
| 24 MANCH IN | displays latest received data from base station |
| 25 VOLUME | sets earpiece and loudspeaker volume |
| 26 DTMF | DTMF tones |
| 27 TX SOURCE | sets TX audio paths in audio circuit |
| 28 EARPIECE | sets earpiece mute switch in audio circuit |
| 29 COMPAND | selects compander/linear mode |
| 30 HF | controls handsfree attenuation level for RX and TX audio |
| 32 SOFTLIMIT | sets use of softlimiter in audio circuit |
| 35 COUNTRY | factory and level 5 repair only |
| 36 BER | factory and level 5 repair only |
| 37 OMC | factory and level 5 repair only |
| 38 ADC | displays different hex values from ADC |
| 39 DAC | changes temporarily output voltage from DAC |
| 40 INPORTS | shows status of different inports |

| <i>Menu</i> | <i>Possible Values</i> |
|-------------------------|---|
| 41 OUTPORTS | selects status of selected outport |
| 42 DISCR | turns discriminator/multiplier on/off |
| 43 BAR | tests different tones of phone |
| 45 LCD | tests different segments and icons of display |
| 46 PWR DOWN | factory and level 5 repair only |
| 47 SW REV | displays software, revision and ESN inside terminal |
| 48 SYNTH | factory and level 5 repair only |
| 49 RX PWR MODE | factory and level 5 repair only |
| 50 GUARANTEE | warranty information |
| 53 SYNT I SET | factory and level 5 repair only |
| 54 EEPROM INIT | factory and level 5 repair only |
| 60 SYNTH | factory and level 5 repair only |
| 61 AUDIO CIRCUIT | factory and level 5 repair only |
| 62 RADIO CTRL | factory and level 5 repair only |
| 74 TCA TEST | checks ETACS combining algorithm |
| 76 BATT SAVE | controls reduced and extra power functions |
| 77 EEDATA | factory and level 5 repair only |
| 79 PIN | factory and level 5 repair only |
| 91 EEPROM DUMP | factory and level 5 repair only |
| 92 EEPROM LOAD | factory and level 5 repair only |
| 96 COLD START | powers up in 'terminal charge only mode' |
| 97 FLASH CHSUM | calculates checksum of flash memory |
| 98 ERROR | factory and level 5 repair only |
| 99 EXIT | press # to exit service program |

ETACS Service Program

The *ETACS Service Program* is a tool used for entering the initializing customer parameters into the EEPROM of the Ericsson mobile phone *EF738*.

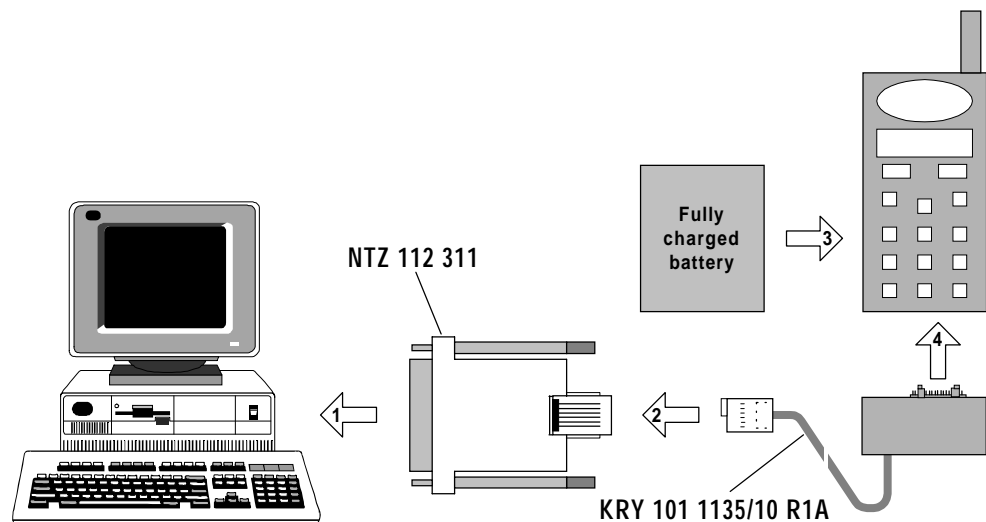
This description of the *ETACS Service Program* includes information on:

- hardware requirements
- software setup
- programming instructions

Hardware Requirements

The following equipment is required when using the *ETACS Service program* for the *EF738* Ericsson mobile phone:

- PC with Windows 3.1 or Windows 95 operating system
- COM port (COM1 - COM2) available on the PC
- Programming cable, KRY 101 1135/10 R1A
- Programming interface, NTZ 112 311
- Adapter, 25- to 9-pin; for PC equipped with a 9-pin COM-connector (not supplied by Ericsson)



Software Installation

The *ETACS Service Program* consists of four files:

- SPEP1361.EXE
- TYPE1361.CFG
- TYPE1361.EDT
- TYPE1361.MNU

The program can be run directly from a diskette, but it is advisable to have it run from the hard disk.

Simply install the software on the hard disk by copying the contents of the diskette to a suitable directory on the hard disk.

The copying of files mentioned above describes how to install the *ETACS Service Program* from a standard floppy disk, but the program may become distributed in other media formats.

CAUTION!

Use a fully charged phone battery, since the interface is powered by the phone. Using an even slightly discharged battery may result in misreadings, even if the Low Battery warning has not yet appeared.

Starting the Program

Turn the phone On.

Start the program by double-clicking the file **SPEP1361.EXE** in the File Manager / Explorer, and the following picture appears on the screen:

File Edit Short Numbers Options

SELECT COM PORT

| | |
|-----|----------------------------|
| 1 | Press digit 1 to use COM1: |
| 2 | Press digit 2 to use COM2: |
| Esc | Press ESC to continue. |

Select the serial port (COM1 or COM2) where the programming interface is connected, as instructed on the screen.

The Programming Cycle

Details of the different entries are given in 'Using the Menus'.

Below is a brief description of the main events.

After selection of the COM port the *Subscriber Data* editing window is automatically displayed. Most customers will require data to be entered in this window only. Move the cursor by the arrow keys of the PC, or click the mouse on the respective field of the window.

Press the **Esc** key to return to the main menu on the top row of the screen.

| SUBSCRIBER DATA | |
|-----------------------|---------------|
| Subscriber No. part1 | 0836 |
| Subscriber No. part2 | 123456 |
| Mobile Stat. Id. No. | 123456 |
| ACCOLC | 5 |
| Home Traffic AID | 0803 |
| Guarantee Start, mmyy | 1097 |
| Guarantee Length, mm | 12 |
| Lock Code | 0000 |

The service program will fetch 'today's date' from the system clock of the PC. Check and (if necessary) correct the date before starting the programming.

When ready to program the telephone, i.e. transfer data into the EEPROM:

- Press **F2** while keeping the **ALT**-key depressed (**ALT+F2**)
- Confirm by pressing the **Y**-key

After the programming the result can be verified by pressing **ALT+F3**.

To exit the program, press **ALT+X**.

Using the Menus

How to Select

Press **Esc** to reach the menu.

From a 'Data edit window' it is also possible to go directly to a sub-menu by holding down the **ALT** key and pressing the highlighted letter in the main menu, e.g.

ALT+F to go to *File* functions.

Move the selection bar (reverse video) to the left or right by the keypad arrow keys to select a sub-menu and press **Enter** to open it. The functions in the sub-menu are selected by moving the selection bar up or down using the arrow keys.

Press **Enter** to activate the selected function, or **Esc** to return to the main menu.

Sub-menus and functions can also be reached by clicking with the mouse.

The Functions

NOTE! Defaults are printed in *italic*.

File

The 'File' sub-menu includes the functions listed below:

| File | | |
|---------------------|-----|----|
| Read | Alt | F1 |
| Burn | Alt | F2 |
| Verify | Alt | F3 |
| Save | Alt | F5 |
| Load | Alt | F6 |
| Reset PIN | Alt | F7 |
| Activate DRX | Alt | F8 |
| Deactiv. DRX | Alt | F9 |
| Exit | Alt | X |

| | |
|-----------------------|---|
| Read | Transfers the contents of the EEPROM to the computer memory. CAUTION! When using this function, make sure to reload the configuration file before programming other phones, as incorrect data inadvertently might be programmed. |
| Burn | Programs the phone with the Subscriber, Country and System data that has been entered into the PC memory. |
| Verify | Comparison between the PC memory and the phone. |
| Save | This command has two different functions: 1. Creates a configuration file which is automatically loaded at each program start. The file name must be manually changed to TYPE1361.CNF . All data from the edit windows are saved. Guarantee Start is set to 'today's date' by the system clock. 2. Saves the data in the phone before service. Data in the edit windows is saved if the file name is other than TYPE1361.CNF. Default name is STATION1.SAV. |
| Load | Reloads a configuration file. |
| Reset PIN | Resets the PIN to 0000. |
| Activate DRX | Activates the Discontinuous Reception feature. CAUTION! May deteriorate the performance of the phone, if DRX is not supported by the system |
| Deactivate DRX | Deactivates the Discontinuous Reception feature. |
| Exit | Quit the program. |

Edit

When leaving the 'File' menu the 'Subscriber Data' edit window is displayed. After pressing **Esc** the 'Edit' sub-menu is reached and the editing windows listed below can be accessed:

Edit

```

Subscriber Data
Misc MMI Features
Sounds & General
Call Set & CallData
System & Services
Sys Opt & Restrict.
Languages
NAM & Quick NAM
Country data 1
Country data 2
Country data 3
Country data 4

```

SUBSCRIBER DATA

```

===== SUBSCRIBER DATA =====
Subscriber No. part1      0836
Subscriber No. part2     123456
Mobile Stat. Id. No.     123456
ACCOLC                   5
Home Traffic AID         0803
Guarantee Start, mmyy    1097
Guarantee Length, mm     12
Lock Code                0000

```

Subscriber No. Part 1/Part 2

The Subscriber No. (shown in certain menus and at power on) is information intended for the user and is not used by the system.

Mobile Station Identification No.

The 6 least significant digits of the international mobile station number, usually identical to the 6 least significant digits of the subscriber number.

ACCOLC

The Access Overload Class is normally the second last digit of the Mobile Station Identification No.

Home Traffic AID

The Home Traffic Area Identification is entered as a hexadecimal code.

Guarantee Start, mmyy

Is read from the PC's system clock at program start, but can be manually altered.

Guarantee Length, mm

To be used in conjunction with the Guarantee Start.

Lock Code

The subscriber's four-digit lock code which must initially be set to 0000 to comply with the information of the User's Manual.

MISCELLANEOUS MMI FEATURES

| MISC MMI FEATURES | |
|----------------------|----------|
| Roam. indicat. type | N |
| Auto Retry | Y |
| Call Count Feature | Y |
| Arrow Indication | 1 |
| Left Arrow Segments | 22C0 |
| Right Arrow Segments | 0251 |
| Int. lock digits | 0A |
| Three level menu | Y |

Roaming Indicator Type

Y = Icon flashing

N = Icon steady on

Auto Retry

Y = Enables Automatic Retry when network is busy

N = Disables Automatic Retry when network is busy

Call Count Feature

Y = Enables registration of unanswered incoming calls

N = Disables registration of unanswered incoming calls

Arrow Indication

0: no arrow is displayed

1: one arrow is displayed

2: one arrow followed by hyphen is displayed

Left Arrow Segments

Layout of Left Arrow Segments: 22C0_{HEX}, (not to be changed)

Right Arrow Segments

Layout of Right Arrow Segments: 0251_{HEX}, (not to be changed)

International Lock Digits

No. of digits as hex. code to define the minimum length of an international phone number

Three Level Menu

Y = 3-level user menu structure is set to comply with the User's Manual

N = 2-level user menu structure

SOUNDS & GENERAL

| SOUNDS & GENERAL | | | | |
|--------------------|---|----------|---|---|
| Ring Vol Menu | | Y | | |
| Ringtone Menu | | Y | | |
| KeySound Menu | | Y | | |
| Silent Menu | | Y | | |
| Not used, set to N | N | N | N | N |
| Backlite Menu | | Y | | |
| Greeting Menu | | Y | | |
| Language Menu | | Y | | |
| Reset Menu | | Y | | |
| Mem Used Menu | | Y | | |
| Keylock Menu | | Y | | |
| Not used, set to N | N | N | | |

Ring Volume Menu

Y = Ringing volume selection 'Low/Med/High/Step/Silent' enabled

N = Ringing volume selection disabled.

RingTone Menu

Y = Ringing tone selection 'Low/Med/High/Mixed/Scale/Fast/Melodies' enabled

N = Ringing tone selection disabled.

KeySound Menu

Y = Key sound selection 'Burst/Continuous/Click/Silent' enabled

N = Key sound selection disabled

Silent Menu

Y = Silent Mode selection 'Off/On' enabled

N = Silent Mode selection disabled

BackLite Menu

Y = Backlight selection 'Off/On 10sec/On 20sec' enabled

N = Backlight selection disabled

Greeting Menu

Y = Greeting String (at power on) choice enabled

N = Greeting String disabled

Language Menu

Y = Language selection 'English/Espanol/Italiano/Deutsch/Melayu' enabled

N = Language selection disabled

Reset Menu

Y = Reset option 'Reset All' enabled

N = Reset option disabled

Memory Used Menu

Y = Memory Used Menu is accessible

N = Memory Used Menu not accessible

KeyLock Menu

Y = Key lock selection 'Unlock/Lock' enabled

N = Key lock selection disabled

CALL SET & CALL DATA

| CALL SET & CALldata | | | |
|---------------------|---|-------------------------------------|---|
| Fastdial Menu | | <input checked="" type="checkbox"/> | |
| Flip Menu | | Y | |
| Answ Opt Menu | | Y | |
| Minder Menu | | Y | |
| Tonesend Menu | | Y | |
| Acc Tone Menu | | Y | |
| Air Info Menu | | N | |
| Call Type Menu | | Y | |
| LastTime Menu | | Y | |
| LastChar Menu | | N | |
| Tot Time Menu | | Y | |
| Tot Char Menu | | N | |
| Call Cnt Menu | | Y | |
| Not used, set to N | N | N | N |

FastDial Menu

Y = Fast Dial (one-key-dial) selection 'Off/On' enabled

N = Fast Dial selection disabled

Flip Menu

Y = Flip (answer/end-call) selection 'Off/On' enabled

N = Flip answer/end-call disabled

Answering Option Menu

Y = Answering method selection 'Any Key/Send Only' enabled

N = Answering method selection disabled

Minder Menu

Y = Minder (minute beep) selection 'Off/On' enabled

N = Minder selection disabled

Tone Send Menu

Y = Tone Send (DTMF when key pressed during call) selection 'Off/On' enabled

N = Tone Send selection disabled

Access Tone Menu

Y = Access Tone (outgoing call established) selection 'Off/On' enabled

N = Access Tone selection disabled

Air Info Menu

Y = Air Info (duration or charge) display selection 'Air Time/Call Charge' enabled

N = Air Info disabled

Call Type Menu

Y = Call Type charge (out or out/in) display selection 'Only Out/Out and In' enabled

N = Call Type charge display selection disabled

Last Time Menu

Y = Last Time (duration of last call) display selection enabled

N = Last Time display selection disabled

Last Charge Menu

Y = Last Charge (no. of charge units for last call) display selection enabled

N = Last Charge display selection disabled

Total Time Menu

Y = Total Time (since counter reset) display selection enabled

N = Total Time display selection disabled

Total Charge Menu

Y = Total Charge (since counter reset) display selection enabled

N = *Total Charge display selection disabled*

Call Count Menu

Y = *Call Count* (no. of in/out-going calls since reset) *display selection enabled*

N = Call Count display selection disabled

SYSTEM & SERVICES

| SYSTEM & SERVICES | |
|----------------------|----|
| ETACS Type | Y |
| ITACS Type | N |
| MS supp. TACS level | 1 |
| Call Line Identific. | Y |
| Long NAM Prog. Entry | N |
| Test Program Entry | N |
| Country Menu Entry | Y |
| Rescan Time, minutes | 5 |
| Handset Feature | N |
| No of Auto Retries | 3 |
| Sys. Busy Wait Time | 0A |
| Called side BW Time | 1E |
| Keypad Layout Type | 1 |
| ABC Indicator Debug | 0 |
| Not used, set to 00 | 00 |

ETACS Type

Y = Phone is an ETACS type

N = Phone is a TACS only type

ITACS Type

Y = Phone is an ITACS type

N = Used in combination with ETACS type

Mobile Station supported TACS level

0: if TACS

1: if TACS-2

Calling Line Identification

Y = Calling Line Identification functions enabled

N = Calling Line Identification functions disabled

Long NAM Programming Entry

Y = User access to the NAM menu is enabled

N = User access to the NAM menu is disabled

Test Program Entry

Y = The test program is accessed by entering a code on the keypad

N = The test program cannot be accessed from the keypad

Country Menu Entry

Y = User access to the Country Menu is enabled

N = User access to the Country Menu is disabled

Rescan Time, minutes

No. of minutes until a Rescan is started (default: 5 minutes) after signalling

Handset Feature

Y = Handset Feature enabled

N = Handset Feature disabled

No. of Auto Retries

Max. number of Automatic Retries (default: 3)

System Busy Wait Time

Time between attempts in Auto Retry when system is busy (default: 0A_{HEX})

Called Side Busy Wait Time

Time between attempts in Auto Retry when called number is busy (default: 1E_{HEX})

Keypad Layout Type

0: Not applicable

1: *New international alpha keypad layout*

ABC Indicator Debug

Enables the use of special indicators, 'ABC', for internal tests:

0: *not used*

1: NAM system indication

2: Accessory indication

3: Data/Voice mode

4: TX power indication

5: Power save indication

SYSTEM OPTIMIZATION & RESTRICTIONS

| SYS OPT & RESTRICT. | | | | | | | | | |
|----------------------|-------------------------------------|---|---|---|---|---|---|--|--|
| Enable NAM Selection | <input checked="" type="checkbox"/> | | | | | | | | |
| Enable Country Sel. | Y | | | | | | | | |
| Not used, set to N | N | N | N | N | N | N | | | |
| Sec Code Menu | Y | | | | | | | | |
| Not used, set to N | N | N | N | N | N | N | N | | |
| Mem Only Menu | Y | | | | | | | | |
| No Calling Menu | Y | | | | | | | | |
| No Inter Menu | Y | | | | | | | | |
| Auto Lock Menu | Y | | | | | | | | |
| Not used, set to N | N | N | N | N | | | | | |

Enable NAM Selection

Y = NAM selection enabled

N = NAM selection disabled

Enable Country Selection

Y = Country selection enabled

N = Country selection disabled

Security Code Menu

Y = Security Code (4-digit personal code) Menu is accessible

N = Security Code Menu not accessible

Memory Only Menu

Y = Memory Only (calls from mem. pos. 1-10 only) Menu is accessible

N = Memory Only Menu not accessible

No Calling Menu

Y = No Calling (receive only) Menu is accessible

N = No Calling Menu not accessible

No Inter Menu

Y = No Inter (no international calls) Menu is accessible

N = No Inter Menu not accessible

Auto Lock Menu

Y = Auto Lock (phone locked at power-up) Menu is accessible

N = Auto Lock Menu not accessible

LANGUAGES

| LANGUAGES | | | |
|--------------------|---|---|---|
| Not used, set to Y | Y | | |
| Spanish | Y | | |
| Italian | Y | | |
| Deutsch | Y | | |
| Melayu | Y | | |
| Not used, set to N | N | N | N |

Spanish

Y = Spanish language selectable

N = Spanish language not selectable

Italian

Y = Italian language selectable

N = Italian language not selectable

Deutsch

Y = German language selectable

N = German language not selectable

Melayu

Y = Malayan language selectable

N = Malayan language not selectable

NAM & QUICK NAM

| NAM & QUICK NAM | | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|--|---------------|
| ESN | Y | | | | | | | | Y |
| CODE | Y | | | | | | | | N |
| ROAM TYPE | Y | | | | | | | | N |
| CHARGE | Y | | | | | | | | Y |
| CHAN, FCCHA, FCCHB | Y | Y | Y | Y | | | | | N N N |
| BANDA, BANDB | Y | Y | | | | | | | N N |
| NO EMERG | Y | | | | | | | | N |
| EMERG 1, EM.2, EM.3 | Y | Y | Y | | | | | | N N N |
| ENQUIRY | Y | | | | | | | | N |
| INTER PREF | Y | | | | | | | | Y |
| NAM | Y | | | | | | | | N |
| IMSI, SUBN | Y | Y | | | | | | | Y Y |
| SYSTEM | Y | | | | | | | | N |
| AIDH, FPCH, ROAM | Y | Y | Y | | | | | | Y N N |
| ACCOLC, LOCAL, EXT | Y | Y | Y | | | | | | N N N |
| Not used, set to Y/N | Y | Y | Y | Y | Y | Y | Y | | N N N N N N N |

The table above displays the various programmable parameters for:

- NAM programming (center column)
- Quick NAM programming (right column)

By entering a Y, the parameter becomes accessible for programming.

By entering a N, the parameter becomes not accessible for programming.

The default settings for the accessibility of the NAM and Quick NAM parameters are as listed in the table above.

For more detailed information, refer to 'Keypad NAM Programming' which is found further on in this section.

COUNTRY DATA

The example below shows one out of four country dependent data tables.
The parameters are identical for all countries, but the settings will vary.

| COUNTRY DATA 1 | | | |
|----------------------|------------|---------|------------|
| Country Name | UK | | |
| CC Data, System A B | 0023 21 | 0323 21 | |
| Station Class Mark | 13 | | |
| Enquiry Number | 3 | 192 | |
| No of Emergency No.s | 3 | | |
| Emergency no. 1 | 3 | 999 | |
| Emergency no. 2 | 3 | 112 | |
| Emergency no. 3 | 0 | | |
| Intern. Prefix Info | 2 | 00 | |
| NAM User Selectable | Y | | N |
| Subscriber No. | 0836123456 | | 0836123456 |
| Mobile Stat. id. No. | 123456 | | 123456 |
| ACCOLC AID | 5 | 0803 | |
| Inter System Roaming | N | | N |
| System | A | | A |
| First Paging Channel | 0023 | | 0023 |
| Country & Netw. Code | 234 A | | 234 A |
| Send Ext. MS Number | N | | N |
| Resp. to Local Mess. | N | | N |

Country Name

If the Country Name contains less than ten letters, remaining positions can be blank.

CC Data, System A B

First control channels and the number of control channels for system A and B.
Values are to be entered in decimal form.

Station Class Mark

The Station Class Mark is always set tot 13_{HEX}.

Enquiry Number

The number of digits of the Enquiry Number and the actual Enquiry Number.

No. of Emergency Numbers

The total number of available Emergency Numbers.

Emergency No. 1

The number of digits of the Emergency Number and the actual Emergency Number.

Emergency No. 2

As Emergency No.1, if available, otherwise set to 0.

Emergency No. 3

As Emergency No.1, if available, otherwise set to 0.

International Prefix Information

The number of digits of the International Prefix and the actual International Prefix.

NAM User Selectable

Y = NAM can be selected by the user

N = NAM cannot be selected

Note! First NAM must always be enabled

Subscriber No.

The Subscriber Number is a max. 10-digit number from which the user may want only part of it to be displayed.

Enter **A** for 10-digit display, or

enter **0** to **9** for the reduced number of digits, counted from the end digit.

The Subscriber No. is information aimed for the user and is not used by the system.

Mobile Station Identification No.

The 6 least significant digits of the international mobile station number, in most countries equal to the 6 least significant digits of the subscriber number.

ACCOLC, AID

The Access Overload Class, normally the last digit of the Mobile Station Id. No., followed by the Home Traffic Area Identification entered as hex. code.

Inter System Roaming

Y = Inter System Roaming enabled

N = Inter System Roaming disabled

System

A = System A is the home system in the NAM

B = System B is the home system in the NAM

First Paging Channel

First paging channel in the present NAM to be entered in decimal form.

Country & Network Code

Mobile Country Code (3 digits), followed by Mobile Network Code (1 digit), for the present NAM.

Send External Mobile Station Number

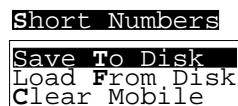
Y = Phone must send the extended address word when accessing the system

N = Extended address word not required when accessing the system

Response to Local Message

Y = Phone must respond to local control messages sent on the FOCC

N = Response not required to local control messages sent on the FOCC

Short Numbers

Save To Disk Reads the short numbers from the telephone and transfers them to a file, see below.

Load From Disk Reads short numbers from a file and stores (burns) them in the phone.

Clear Mobile Clear all short numbers in the phone.

Options

COM Port Possible to change the COM-port without leaving the program, for example, when having programming interfaces connected to both COM-ports.

Re-Programming a Telephone

When making changes to a telephone that has already been programmed, first read the EEPROM by pressing **ALT+F1**. Then perform the desired changes and program the EEPROM by pressing **ALT+F2**. Verify by pressing **ALT+F3**.

Note: Make sure that the configuration file has been reloaded before programming other phones. Otherwise incorrect data may inadvertently be programmed.

Contents of Saved Short Number Files

The 'Save' file is a normal text file which may be edited by any word processor or text editor as an ASCII text file. It is possible to create a file independently from the program, and then use the program for transfer to the telephone. The file does not have to list the short numbers in any particular order, and it is not necessary to supply all 99 numbers.

For example, it is possible to create a file with only three short numbers at pos. 21, 22, and 23, and add these to a phone that already has some numbers programmed.

Each line of the file should have the following form:

1. Two digits representing the Short Number positions from 01 through 99.
2. Name of the subscriber, maximum 10 characters, letters and digits.
3. Telephone number of no more than 16 or 32 characters (system dependent).
Digits 0 - 9, *, and # are allowed.

Example:

```
01 ERICSSON 0094646193000
02 JOHN DOE 12345678
03 TRANSFER *21*9171234567#
```

Lines containing the positions only will erase the shortcodes, for example:

```
04
05
06
```

A line containing text only 'NO NUMBERS' is a comment and will not cause any programming of the telephone.

Keypad NAM Programming

The *Keypad NAM (Number Assignment Modules) Programming* includes not only the NAM parameters but also some functionally related parameters as well as country dependent parameters.

Two different *Keypad NAM Programming* modes are available:

- Long NAM (non-user selectable by default)
- Quick NAM (always selectable)

A list of the available programmable parameters, programming instructions, and country-related default values for Long resp. Quick NAM follows.

Long NAM Programming

Programmable Parameters

Electrical Serial Number (ESN)

The ESN, which is a unique binary number that identifies the MS to the cellular system, is set by the factory and can not be modified.

Security Code

This code gives the user access to protected memory locations, resetting of menus, and setting of call restrictions.

Roam Type

The roaming indicator can be set in three different modes: off, flashing, steady-on.

Subscription with Charge Rate

This parameter determines whether AirTime/CallCharge is selectable by the user.

Number of Channels

Defines the allowed number of channels according to the frequency band.

First Dedicated Control Channel in System A

This control channel number can be programmed in service mode for internal tests.

First Dedicated Control Channel in System B

This control channel number can be programmed in service mode for internal tests.

Total Number of Dedicated Control Channels in System A

Maximum number of dedicated control channels in System A.

Total Number of Dedicated Control Channels in System B

Maximum number of dedicated control channels in System B.

Number of Emergency Numbers

Determines the number (≤ 3) of available emergency numbers for the country.

Emergency Number 1

States the first emergency number.

Emergency Number 2

States the second emergency number (if exists).

Emergency Number 3

States the third emergency number (if exists).

Enquiry Number

States the enquiry number

Country International Prefix

Prefix required when dialing an international call.

This parameter detects an international call at call restrictions.

NAM

Each country area is subdivided into NAM-areas NAM1 and NAM2, which are programmed with System A and System B parameters when shipped from factory. A configuration of system and subscriber data (preferred system, subscriber number, etc.) can be programmed into each NAM.

International Mobile Station Identity (IMSI)

This IMSI identity is a 10-digit number composed of three parts:

- MNC (Mobile Network Code), 3 digits
- MCC (Mobile Country Code), 1 digit
- MSIN (Mobile Station Identification Number), 6 digits

Subscriber Number

The subscriber number may include from 0 up to 10 digits.

Pref Sys

Both NAMs associated with each country are programmable to become operable in both systems. If both systems are programmed as System A, the automatic NAM switch function will search the A system channels for both NAMs.

Home System Identity Number (AID)

This identity number states the subscriber home system and is provided by the subscription operator.

First Paging Channel

The first paging channel is programmed in service mode and the appropriate value for this parameter is provided by the home system operator at subscription.

Roam

This parameter defines whether inter system roaming is allowed on the complementing network or not. If set, it will enable the use of both systems (A and B) in the present NAM.

Access Overload Class

Overload class field that controls access attempts made by the MS (identical to the second last digit of the IMSI).

Response to Local Control Message Enabled

Determines whether the MS will respond to Local Control Messages sent on the Forward Control Channel.

Sending of Extended MS Number

Determines whether the MS must send the extended address word when accessing the system.

Programming Instructions

To enter the Long NAM Programming mode:

- press **9 2 3 8 8 5**, **MENU**, **MENU** or
- keep the **MENU** key depressed while pressing **9 2 3 8 8 5**

After entering the Long NAM Programming mode, the phone exits the Standby mode, turns off the radio, and becomes non-operational.

Key Functions

| Key | Function |
|------------|--|
| MENU | Saves value and steps forward |
| ↑ | Saves value and steps forward |
| ↓ | Saves value and steps backwards |
| MEM | Moves to beginning of present menu |
| * | Moves to beginning of NAM submenu (when in NAM menu) |
| # | Moves to beginning of Long NAM Programming menu |
| CLR | Returns to previous value |
| 0-9 | Entry of numbers and toggling of values |
| End/Pwr/No | Exit from Long NAM Programming mode |

NOTE! Due to the limited amount of display characters, some parameters will be displayed as two parts, an intro text shown for 1 second followed by the numeric data (indicated as two text rows in the *Display*-column below).

| Menu Type | Display | Menu | Action |
|---|-----------------------------------|------|--|
| ESN (Electrical Serial No.) | ESN 1 2 3 1 2 3 4 5 6 7 8 | 1 | 3 most significant digits shown 1 sec; Remaining digits shown thereafter |
| Security code | CODE 0 0 0 0 | 2 | Code shown (set in menu mode) |
| Roam type | ROAMTYPE 0 | 4 | Press '0-9' to switch 'ROAMTYPE1' |
| Subscription with charge rate | CHARGE OFF | 5 | Press '0-9' to switch 'CHARGE ON' |
| Number of channels | CHAN 1 3 2 0 | 6 | Press '0-9' to switch 'CHAN 600' |
| 1st dedicated control channel in System A | FCCHA 0 0 2 3 | 7 | Enter number (0000-0600,1329-2047) incl. leading zeroes |
| 1st dedicated control channel in System B | FCCHB 0 3 2 3 | 8 | Enter number (0000-0600,1329-2047) incl. leading zeroes |
| Total no. of dedicated control channels in System A | BANDA 0 0 2 1 | 9 | Enter 4-digit number incl. leading zeroes |
| Total no. of dedicated control channels in System B | BANDB 0 0 2 1 | 10 | Enter 4-digit number incl. leading zeroes |
| No. of emergency numbers | NO EMERG 1 | 11 | Enter digit 0-3 |
| Emergency number 1 | EMERGENCY1 9 1 1 | 12 | Enter max. 10 digits, press 'MENU' or '↑' to go to next emerg. no, if any |
| Enquiry number | ENQUIRY 9 1 2 | 13 | Enter a number with max. 10 digits |
| Country international prefix | INTER PREF 0 7 | 14 | Enter a number with max. 4 digits |
| NAM | NAM 1 | 15 | Press '0-9' to switch 'NAM2' |
| International Mobile Station Identity Number (IMSI) | IMSI 1 1 1 1 1 1 1 0 1 1 1 | 16 | Enter a 10-digit number |
| Subscriber number | SUBNUMBER1 1 1 1 1 1 1 0 1 1 1 | 17 | Enter a max. 10-digit number |
| Pref Sys | SYSTEM1 A | 18 | Press '0-9' to switch 'SYSTEM1 B' |
| Home system identity number (AID) | AID1 0 0 0 0 0 | 19 | Enter a number (00000-32767) incl. leading zeroes |
| 1st paging channel | FPCH1 0 0 2 3 | 20 | Enter a number (000-600,1329-2047) incl. leading zeroes |
| Roam | ROAM1 ON | 21 | Press '0-9' to switch 'ROAM1 OFF' |
| Access overload class | ACCOLC1 0 1 | 22 | Enter two digits (00-15). Default = 0 + second last IMSI digit |
| Response to local control message enabled | LOCAL 1 ON | 23 | Press '0-9' to switch 'LOCAL1 OFF' |
| Sending of extended MS number | EXT1 ON | 24 | Press '0-9' to switch 'EXT1 OFF' |

Default Values

| Parameter | Austria | China | Hong Kong | Ireland | Italy | Malaysia |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| ESN (Electrical Serial No.) | | | | | | |
| Security code | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |
| Roam type | 0 | 0 | 0 | 0 | 0 | 0 |
| Subscription with charge rate | off | off | off | off | off | off |
| Number of channels | 1320 | 1320 | 1320 | 1320 | 1320 | 1320 |
| 1st dedicated control channel in System A | 0023 | 0023 | 1996 | 0023 | 0023 | 0023 |
| 1st dedicated control channel in System B | 0323 | 0323 | 0323 | 0323 | 0323 | 0323 |
| Total no. of dedicated control channels in System A | 0021 | 0021 | 0021 | 0021 | 0021 | 0021 |
| Total no. of dedicated control channels in System B | 0021 | 0021 | 0021 | 0021 | 0021 | 0021 |
| No. of emergency numbers | 3 | 2 | 3 | 2 | 3 | 2 |
| Emergency number 1 | 122 | 110 | 112 | 999 | 116 | 999 |
| Emergency number 2 | 133 | 119 | 110 | 112 | 113 | 112 |
| Emergency number 3 | 144 | | 119 | | 112 | |
| Enquiry number | 11611 | | 108 | 192 | | 103 |
| Country international prefix | 00 | 00 | 00 | 00 | 00 | 00 |
| NAM | | | | | | |
| International Mobile Station Identity Number (IMSI) | 232 0 123456 | 460 0 123456 | 454 2 123456 | 234 0 123456 | 222 2 123456 | 502 0 123456 |
| Subscriber number | 0000 123456 | 0836 123456 | 90 123456 | 0836 123456 | 0337 123456 | 0000 123456 |
| Pref Sys | A | A | A | A | A | A |
| Home system identity number (AID) | 26625 | 02051 | 11083 | 02051 | 24641 | 18435 |
| 1st paging channel | 0023 | 0023 | 1996 | 0023 | 0023 | 0023 |
| Roam | off | off | off | off | off | off |
| Access overload class | 05 | 05 | 05 | 05 | 05 | 05 |
| Response to local control message enabled | off | off | off | off | off | off |
| Sending of extended MS number | off | off | off | off | off | off |

| Parameter | Philippines | Singapore | Spain | UK | Kuwait |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|
| ESN (Electrical Serial No.) | | | | | |
| Security code | 0000 | 0000 | 0000 | 0000 | 0000 |
| Roam type | 0 | 0 | 0 | 0 | 0 |
| Subscription with charge rate | off | off | off | off | off |
| Number of channels | 1320 | 1320 | 1320 | 1320 | 1320 |
| 1st dedicated control channel in System A | 0023 | 0023 | 0023 | 0023 | 0023 |
| 1st dedicated control channel in System B | 0323 | 0323 | 0323 | 0323 | 0323 |
| Total no. of dedicated control channels in System A | 0021 | 0021 | 0021 | 0021 | 0021 |
| Total no. of dedicated control channels in System B | 0021 | 0021 | 0021 | 0021 | 0021 |
| No. of emergency numbers | 2 | 2 | 0 | 2 | 2 |
| Emergency number 1 | 110 | 995 | | 999 | 999 |
| Emergency number 2 | 119 | 112 | | 112 | 112 |
| Emergency number 3 | | | | | |
| Enquiry number | | 5319828 | 908 | 192 | 192 |
| Country international prefix | 00 | 00 | 07 | 00 | 00 |
| NAM | | | | | |
| International Mobile Station Identity Number (IMSI) | 460 0 123456 | 525 7 123456 | 214 8 123456 | 234 0 123456 | 234 0 123456 |
| Subscriber number | 0836 123456 | 7 123456 | 908 123456 | 0836 123456 | 0836 123456 |
| Pref Sys | A | B | B | A | A |
| Home system identity number (AID) | 02051 | 20480 | 23552 | 02051 | 02051 |
| 1st paging channel | 0023 | 0323 | 0323 | 0023 | 0023 |
| Roam | off | off | off | off | off |
| Access overload class | 05 | 05 | 05 | 05 | 05 |
| Response to local control message enabled | off | off | off | off | off |
| Sending of extended MS number | off | off | off | off | off |

Quick NAM Programming

The number of programmable parameters available in Quick NAM Programming is defined, as earlier described, in *ETACS Service Program (NAM & Quick NAM)*. The parameters below are the available Quick NAM Programmable Parameters as set by default.

Programmable Parameters

Electrical Serial Number (ESN)

The ESN, which is a unique binary number that identifies the MS to the cellular system, is set by the factory and can not be modified.

Subscription with Charge Rate

This parameter determines whether AirTime/CallCharge is selectable by the user.

Country International Prefix

Prefix required when dialing an international call.

This parameter detects an international call at call restrictions.

International Mobile Station Identity (IMSI)

This IMSI identity is a 10-digit number composed of three parts:

- MNC (Mobile Network Code), 3 digits
- MCC (Mobile Country Code), 1 digit
- MSIN (Mobile Station Identification Number), 6 digits

Subscriber Number

The subscriber number may include from 0 up to 10 digits.

Home System Identity Number (AID)

This identity number states the subscriber home system and is provided by the subscription operator.

Programming Instructions

To enter the Quick NAM Programming mode:

- press **9 8 7**, **MENU**, **MENU** or
- keep the **MENU** key depressed while pressing **9 8 7**

By scrolling forward '↑' or backwards '↓', all NAMs will be reached.

NOTE! Due to the limited amount of display characters, some parameters will be displayed as two parts, an intro text shown for 1 second followed by the numeric data (indicated as two text lines in the *Display*-column below).

| Menu Type | Display | Menu | Action |
|--|--|------|---|
| ESN (Electrical Serial No.) | ESN 1 2 3 1 2 3 4 5 6 7 8 | 1 | 3 most significant digits shown 1 sec; Remaining digits shown thereafter |
| Subscription with charge rate | CHARGE OFF | 2 | Press '0-9' to switch 'CHARGE ON' |
| Country international prefix | INTER PREF 0 7 | 3 | Enter a number with max. 4 digits |
| International Mobile Station Identity Number (IMSI) | IMSI 1 1 1 1 1 1 1 0 1 1 1 | 4 | Enter a 10-digit number |
| Subscriber number | SUBNUMBER1 1 1 1 1 1 1 0 1 1 1 | 5 | Enter a max. 10-digit number |
| Home system identity number (AID) | AID1 0 0 0 0 0 | 6 | Enter a number (00000-32767) incl. leading zeroes |

Default Values

| Parameter | Austria | China | Hong Kong | Ireland | Italy | Malaysia |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| ESN (Electrical Serial No.) | | | | | | |
| Subscription with charge rate | off | off | off | off | off | off |
| Country international prefix | 00 | 00 | 00 | 00 | 00 | 00 |
| International Mobile Station Identity Number (IMSI) | 232 0 123456 | 460 0 123456 | 454 2 123456 | 234 0 123456 | 222 2 123456 | 502 0 123456 |
| Subscriber number | 0000 123456 | 0836 123456 | 90 123456 | 0836 123456 | 0337 123456 | 0000 123456 |
| Home system identity number (AID) | 26625 | 02051 | 11083 | 02051 | 24641 | 18435 |

| Parameter | Philippines | Singapore | Spain | UK | Kuwait |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|
| ESN (Electrical Serial No.) | | | | | |
| Subscription with charge rate | off | off | off | off | off |
| Country international prefix | 00 | 00 | 07 | 00 | 00 |
| International Mobile Station Identity Number (IMSI) | 460 0 123456 | 525 7 123456 | 214 8 123456 | 234 0 123456 | 234 0 123456 |
| Subscriber number | 0836 123456 | 7 123456 | 908 123456 | 0836 123456 | 0836 123456 |
| Home system identity number (AID) | 02051 | 20480 | 23552 | 02051 | 02051 |

Flash Programming

Introduction

The *Ericsson Mobile Maintenance Applications (EMMA)* flash program is a tool used for upgrading and recovery of the software for the new generation of Ericsson mobile phones.

This description of the EMMA flash program includes information on:

- hardware requirements
- software setup
- hardware setup
- flashing instructions

Hardware Requirements

The following equipment is required when using the EMMA flash program for the Ericsson mobile phones:

- PC with Windows 3.1 (or later) operating system
- COM port (COM1 - COM4) available on the PC
- Programming cable, KRY 101 1135/10 R1A
- Programming interface, NTZ 112 311
- Adaptor, 25- to 9-pin; for PC equipped with a 9-pin COM-connector (not supplied by Ericsson)

Software Setup

The EMMA program consists of two separate programs,

- the *SHELL*, one program common for all phone models based on this platform
- the *FLASHER*, one program for each phone model

which are installed in the above sequence.

Note! The installation procedure below describes how to install the EMMA flash program by using standard floppy disks, but the program may become distributed in other media formats.

Installing the Shell Program

It is not possible to install a Flasher program unless the Shell program first has been installed on the local hard disk or a network server.

To install the Shell program, proceed as follows:

4. Close all active windows and insert the Shell disk.
5. In the Program Manager window, click on *File* and *Run*, type **a:setup** in the Command Line box, and click *OK*.
6. After a while, some important information is displayed. Read the information and click *Next* >.
7. The shell program suggests a Destination Location in the directory C:\emma\ If convenient, click *Next* >. If not convenient, click *Browse*, select a suitable directory, and click *Next* >.
8. The copying of files is begun and also displayed by several graphs.
9. After completion of the file copying, the installation of the Shell program is ended, but additional information can be retrieved by clicking *Yes* to the question *Do you want to view the README file now?*
10. Confirm the completion by clicking *OK* in the Information window and remove the disk.

Note! The path and name of the Shell location directory must not be altered after completed installation.

Installing a Flasher Program

After having the Shell program installed, the Flasher programs of various phones based on the same platform are easily added:

1. Close all active windows and insert a Flasher disk.
2. In the Program Manager window, click on *File* and *Run*, type **a:setup** in the Command Line box, and click *OK*.
3. After a while, some important information is displayed. Read the information and click *Next* >.
4. The Flasher program suggests a path and subdirectory where the flasher program is placed. If convenient, click *Next* >. If not, click *Browse*, select a directory path that corresponds with the Shell location register, and click *Next* >.
5. The copying of files is begun and also displayed by several graphs.
6. After completion of the file copying, the installation of the Flasher program is ended. Confirm the completion by clicking *OK* in the Information window and remove the disk.
7. In the Program Manager a new window, EMMA, has been created, from which the Flasher program now can be opened and started by clicking on the group icon *ETACS Flash*.

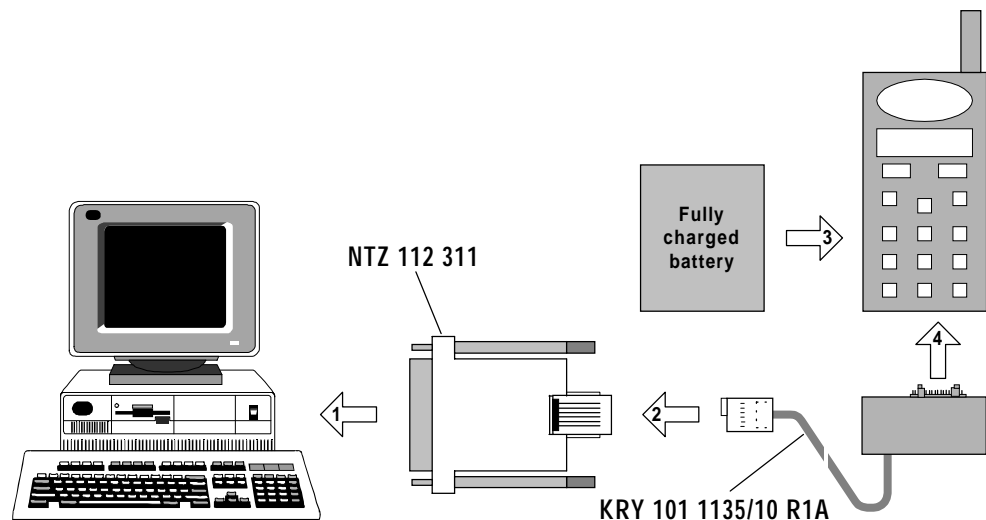
Flash Operation

Hardware Setup

To make the setup for the upgrading of the mobile phones, follow the instructions below and refer to *Figure 1*.

1. Connect the programming interface NTZ 112 311 to an available COM port.
2. Connect the programming cable KRY 101 1135/10 R1A to the interface.
3. Connect a fully charged battery to the phone.
4. Connect the programming cable to the phone.

Keep the phone turned OFF until further notice.



Note!

Use a fully charged phone battery, since the interface is powered by the phone. The use of an even slightly discharged battery may result in erroneous flashing.

Flashing Instructions

1. In the EMMA window of the Program Manager, first double-click the subdirectory *etacsflash* and then double-click the wanted flasher program.
2. If the default Com Port has not previously been set:
Click *Settings* and *Com Port*, select the default Com Port (Com1 - Com4), and click *OK*.
3. To check that the appropriate input file will be used:
Click *Settings* and *Input File*, click *Default* to select the default file, or *New* to select a different input file.

4. Check that the phone is connected to the PC with a fully charged battery as described on previous page.
5. Click *Start* to enter the flashing dialogue.
If required, a Com Port different to the default port can be temporarily selected. The baud rate, 9600, is controlled by the program and can not be manually altered.
6. Press the On/Off-key on the phone and click immediately *Start* to start flashing. *Transferring hex load file* is displayed.
The flash memory is erased after which the actual flash programming process is begun and also displayed by a graph.
7. After completion, click *OK* to confirm *SUCCESSFUL FLASHING!*, disconnect the phone and, if required, connect an identical phone, and repeat the procedure as from step 5.
8. Exit the EMMA flash program.

Note! If the flash programming is not successful or has become interrupted during the flashing process, the flash connector and phone battery have to be disconnected and reconnected before the flashing can be resumed.